

DRILL

① What is the GCF of:

12×3^5 & 18×2^7

GCF: 6×2^5

②

Number Math Puzzle #2

IF $9^{+1} = 10$

$8^{+1} = 18$

$7^{+1} = 24$

$6^{+1} = 28$

$5^{+1} = 30$

THEN $3^{4+1} = ??$ 28

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Factor by Grouping (4 terms)

- Factor out GCF (if exists)
- Group the 1st two terms and factor out its GCF.
- Group the last two terms and factor out its GCF.

Ex:

$$\boxed{2x^2y^3 + 4x^2y^2} + \boxed{6xy - 3}$$

$$* = 2x^2y^2(y+2) + 3(2xy-1)$$

Ex:

$$\begin{aligned} & \overbrace{3x(y+4) - 2(y+4)} \\ &= (y+4)(3x-2) \end{aligned}$$

Ex:

$$\begin{aligned} & \boxed{5x^2 - 10x} + \boxed{3xy - 6y} \\ & \quad \downarrow \qquad \qquad \downarrow \\ &= 5x(x-2) + 3y(x-2) \\ &= (x-2)(5x+3y) = 5x^2 + 3xy - 10x - 6y \end{aligned}$$

$$6ab + 4b - 21a - 14$$

$$= 2b(3a + 2) - 7(3a + 2)$$

$$= (3a + 2)(2b - 7)$$

$$\textcircled{1} \quad \underline{x^3 + 3x^2} + \underline{2x + 6}$$

TRY
IT

$$x^2(\underline{x+3}) + 2(\underline{x+3})$$

$$(x+3)(x^2+2)$$

$$\textcircled{2} \quad (x^4 + 3x^3) + (5x + 15)$$

$$x^3(\underline{x+3}) + 5(\underline{x+3})$$

$$(x+3)(x^3+5)$$

$$\textcircled{3} \quad \underline{x^4 + 3x^3} + \underline{5x + 15}$$

$$x^3(x + \underline{3}) + 5(\underline{x + 3})$$

$$(x + 3)(x^3 + 5)$$

$$\textcircled{4} \quad \underline{x^5 + 2x^2} + \underline{4x^3 + 8}$$

$$x^2(x^3 + 2) + 4(x^3 + 2)$$

$$(x^3 + 2)(x^2 + 4)$$

Ex:

$$\begin{aligned} & (\underline{8x^3} - \underline{4x^2})(-4x + 2) \\ &= \underline{4x^2}(\underline{2x-1}) - 2(\underline{2x-1}) \\ &= (\underline{2x-1})(\underline{4x^2-2}) \end{aligned}$$

↑ ↑